


# Consolidated Product Line Management (CPM) Next Industry Day

**24 June 2013**




# Agenda




| Topics | Briefers |
|---|---|
| ➢ Opening Remarks | COL Flanagan |
| ➢ CPM Next Sources Sought Overview | Tom Coffman |
| ➢ LT2 and CPM Overview | Jim Grosse |
| ➢ LT2 Construct Overview | Jeremy Lanman |
| Break | ALL |
| ➢ CTIA Overview | Jeremy Lanman |
| ➢ CPM NEXT Base SOW | Jim Grosse |
| ➢ Information Assurance | Graham Fleener |
| ➢ CTIA DO SOW | Jeremy Lanman |
| ➢ LT2 Construct DO SOW | Jeremy Lanman |
| ➢ CTC-IS PDSS DO SOW | Mark Dasher |
| ➢ Closing Remarks | Tom Coffman |







# COL Flanagan’s Remarks







# CPM Next Sources Sought Overview

## Tom Coffman




# Consolidated Product Line Management Next (CPM Next)




## Description/Summary of Program Requirements

The CPM Next contract is to continue the managed evolution of the Live Training Transformation (LT2) product line (P/L) and provide total life-cycle support to product managers within the LT2 P/L. The CPM Next contract will continue to meet the requirement for a consolidated streamlined approach that protects and leverages the Army's LT2 P/L investment, continues to evolve the core assets, architectural frameworks, and the LT2 P/L construct while continuing to provide PM TRADE an efficient, effective and agile method for:

- Management, maintenance, and evolution of the LT2 P/L products, processes and core assets
- Total life-cycle system management P/L support of systems/products within the LT2 P/L family of training systems
- P/L support of systems/products that leverage LT2 P/L assets
- Support of external interoperability initiatives such as LVC-ITE, Joint and Foreign Military Sales
- Synchronization with the Warfighter FOCUS (WFF) contract

### ACQUISITION STRATEGY

- Single Award IDIQ (Tentative)
- Competitive

### PERIOD OF PERFORMANCE

5 – 8 years

### MILESTONES

| Feb 13 | June 13 | Mar 14(T) | TBD |
|---|---|---|---|
| RFI | Sources Sought | RFP | Contract Award |

### POINT OF CONTACT

Name: PM TRADE

Phone: 407-384-5201

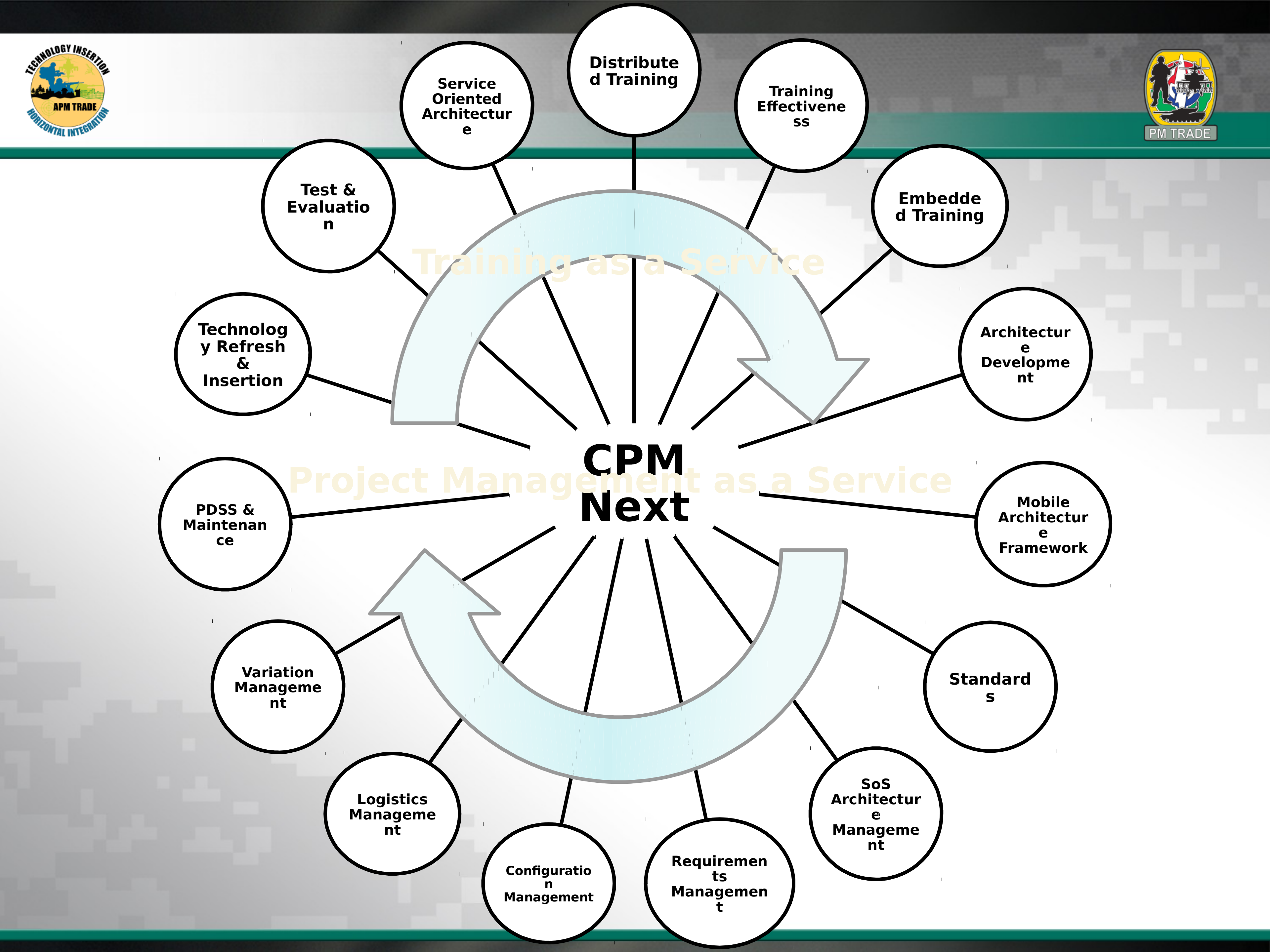
Email: TRADE@peostri.army.mil

### FUNDING

Ceiling: Estimated at $250M - $350M

### CURRENT CONTRACT/ORIGINAL DEVELOPER/OEM (IF RECOMPETE)

GDC4S is currently executing a 5 year PoP CPM


TECHNOLOGY INSERTION
APM TRADE
HORIZONTAL INTEGRATION
PM TRADE
Distribute d Training
Service Oriented Architectur e
Training Effectivene ss
Embedde d Training
Test & Evaluatio n
Training as a Service
Technolog y Refresh & Insertion
Architectur e Developme nt
CPM Next
Project Management as a Service
PDSS & Maintenan ce
Mobile Architectur e Framework
Variation Manageme nt
Standard s
Logistics Manageme nt
SoS Architectur e Manageme nt
Configuratio n Management
Requiremen ts Managemen t




# Seven Themes - One

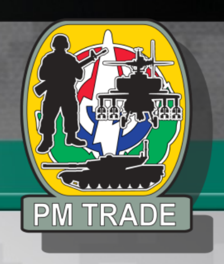



**PM TRADE is looking for ideas, strategies and solutions to enable the LT2 P/L to achieve PM TRADE Strategic Business Goals, listed below:**

- reduce operational costs and complexity
- align and support product development (common standards, interfaces, etc)
- enhance soldier training
- reduce sustainment and development costs
- increase technology agility
- leverage other Army systems and Commercial Off the Shelf (COTS) technologies
- align to the Army COE, mobile computing, and distributed computing strategies



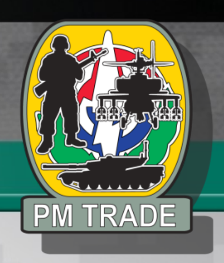

# Seven Themes - Two




**Specifically address ideas, strategies, and solutions related to LT2 P/L Consolidated Post Development System Support (PDSS) and Post Production System Support (PPSS). Please elaborate on how these ideas will result in cost avoidance, increased performance, sustained information assurance accreditation, and higher quality products.**



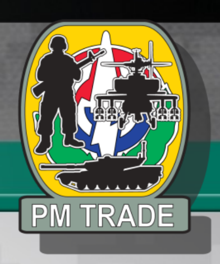

# Seven Themes - Three




**Specifically address ideas, strategies, and solutions related to LT2 P/L fielding Technical Data Packages (TDP). Intent is to address an integrated and open approach for LT2 P/L TDPs to be seamlessly incorporated into sustainment activities repositories.**




# Seven Themes - Four




**Specifically address ideas, strategies and solutions related to LT2 P/L development and sustainment of logistics products such as training, operator, and support manuals, to include TDP artifacts such as drawings, interface control documents, etc. Please elaborate on how these ideas will result in cost avoidance, increased performance, enhanced usability and higher quality products.**



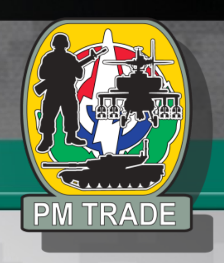

# Seven Themes - Five




**Specifically address ideas, strategies, and solutions related to SoS management & configuration management across the LT2 portfolio of systems and products across the life cycle.**




# Seven Themes - Six




**Specifically address ideas, strategies, and solutions related to optimized testing methodologies and environments across the life cycle within a P/L environment. Please elaborate on how these ideas will result in cost avoidance, increased performance, and higher quality products.**




# Seven Themes - Seven




**Contractual methodologies and teaming arrangements that would increase broad access to technical capabilities as needed in an agile fashion, while minimizing Government costs, such as associated pass through costs within teaming arrangements.**




# Organizational Conflict of Interest (OCI)




- **Current CPM contract contains OCI provisions for protection of proprietary data and its use per FAR 9.505-4(b)**
- **CPM Next anticipates retaining the same proprietary data protection coverage**
- **CPM Next anticipates adding OCI provisions prohibiting the awardee and team from evaluating their own products or services, or those of competitors, without proper safeguards to ensure objectivity to protect the Government's interests per FAR 9.505-3**







# Live Training Transformation (LT2) and CPM Overview

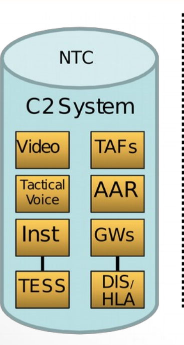
Jim Grosse

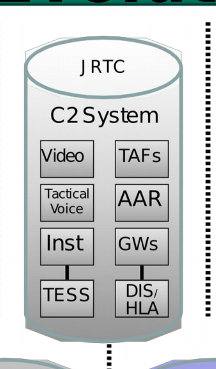
# Live Training Transformation (LT2) Family of Training Systems (FTS) Evolution

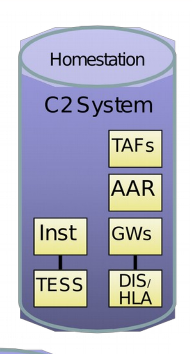


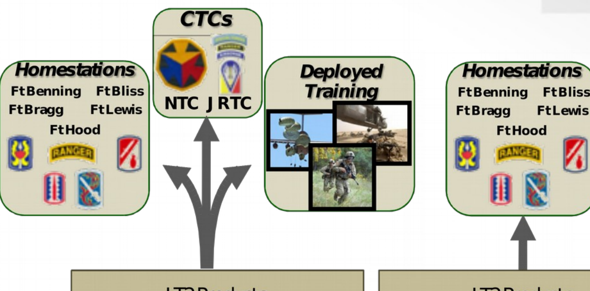






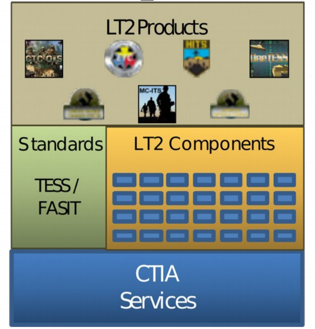



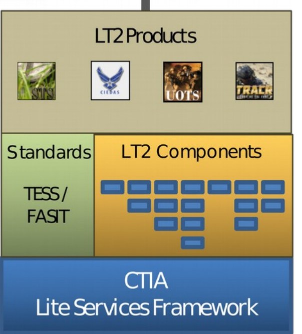



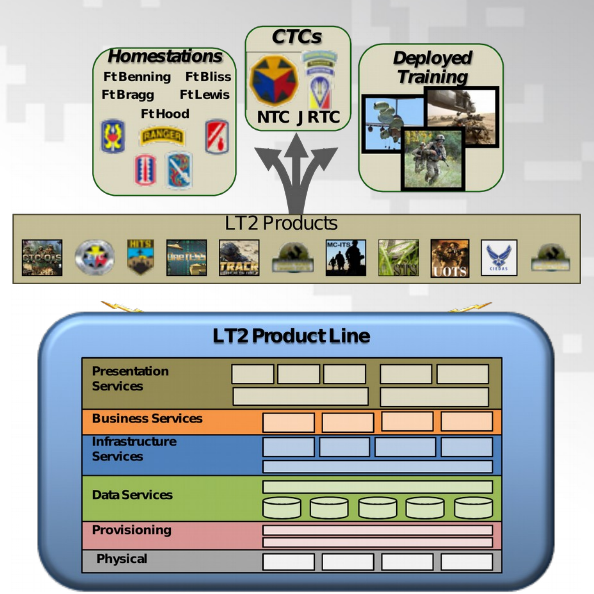

Homestation
C2 System
TAFs
AAR
Inst
GWs
TESS
DIS/ HLA

IMTS
C2 System
Video
TAFs
AAR

. . .



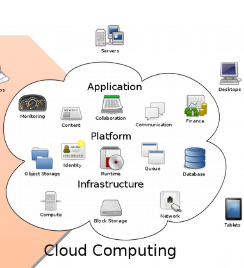




1970s – 2000
Stove-Piped Products

2001 – 2010
1st Generation Product Line

2010 – Future
2nd Generation Product Line
Training as a Service (TaaS)




## LT2 Roadmap Influential Drivers

- Army Training Concept of 2020
- Army Enterprise Network Strategy
- Common Operating Environment
  - Net Centric Enterprise Services
  - Connecting Solders to Digital Apps
  - Regionalized Training Capabilities




# LT2 FTS Operational View




Force-On-Target
Targets
O/Cs
Force-On-Force
Field TOC
CTC ExCon / Homestation / Live Fire Range Ops. Center
Battlefield Effects
Urban Operations

**ExCon & Comms**
ExCon, AAR, RF Comms, ABCS, & Network Data Management
PM CTIS

**Simulated Fire**
Combined Arms Engagement Pairing
BLUFOR & OPFOR
PM LTS

**Live Fire**
Instrumented Urban Operations, & Battlefield Effects
PM DT

**APM TRADE Consolidated Product-Line Management**
**Architectures, Common Components & Services, Standards & Processes**
**A-TESS CTIA FASIT**

LT2 Enabling Framework

LT2 Product-line

Instrumented Ranges | UOTS | CTC-IS | I-MILES | HITS | RISCon | Targets

Products & Programs

Program integration to achieve required training systems capabilities

*Home-station/ Institution*
*Deployed*
*NTC*
*JRTC* *CTC* *JMRC*
*29 Palms*

Family of Training Systems

Legend:

CTC – Combat Training Center
NTC – National Training Center
JRTC – Joint Readiness Training Center
JMRC – Joint Multinational Readiness Center
CTIA – Common Instrumentation Architecture
HITS – Homestation Instrumentation System
I-MILES – Instrumented-Multiple Integrated Laser Engagement System
MC-ITS – Marine Corp – Instrumented Training System
A-TESS – Army-Tactical Engagement Simulation System
UOTS – Urban Operations Training System
FASIT – Future Army System of Integrated Targets




# CPM Efforts Map




**PM TRADE**

**APM TRADE** | **PM CTIS** | **PM LTS** | **PM DT**

100% Utilization across PM TRADE

| APM TRADE | PM CTIS | PM LTS | PM DT |
|---|---|---|---|
| CPM Core (01) | CTC-IS PDSS (02) | OneTESS (05) | Target Mod (04) |
| CTIA (01) | ETC-IS (08) (03) (12) | LT2 Framework (13) | UOTS (04) |
| PLM (01) | HITS (14) | LTEC (13) | DRTS (04) |
| Standards (01) | NTC (06) | | JRTC/JMRC-LF (01) |
| IDE (11) | | | |

C2TE (07)

RISCon (09)

LVC-IA (10)

**Potential Customers**

FMS
Navy
OTC / ATEC

Legend: Active (yellow) / Closed (white)



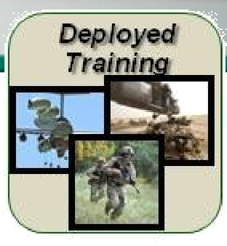

# LT2 ROI







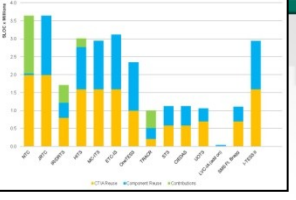



**LT2 Products**

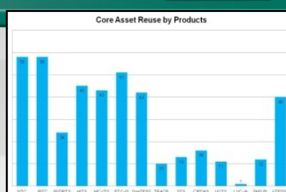
**LT2 Product Line**

| Consolidated Product Line Management | |
|---|---|
| Presentation Services | |
| Business Services | |
| Infrastructure Services | |
| Data Services | |
| Provisioning | |
| Physical | |

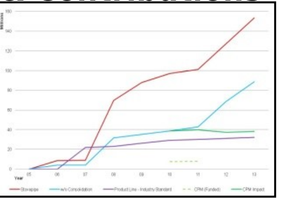


**LT2 Core Asset Reuse & Contributions**

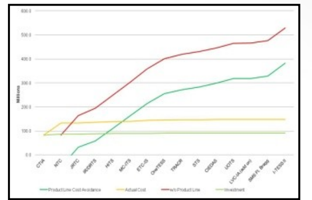
**LT2 Product Cost**




**LT2 Core Asset Reuse by Products**

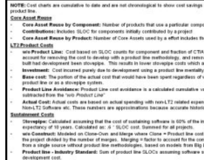


**LT2 Sustainment**



**LT2 Product Cost Cumulative**

**Component Scorecard**



**Metrics Calculation Criteria**

# Components reused

**Core Asset Reuse by Component**




# Core Asset Reuse and Contributions




4,000,000.0
3,500,000.0
3,000,000.0
2,500,000.0
2,000,000.0
1,500,000.0
1,000,000.0
500,000.0
0.0

58
58
24
40
43
51
42
10
13
16
11
1
12
40

NTC
JRTC
IR/DRTS
HITS
MC-ITS
ETC-IS
OneTESS
TRACR
STS
CIEDAS
LVC-IA
LVC-IA (add on)
SMS Ft. Bragg
I-TESS II

Contributions
Component Reuse
CTIA Reuse
# Components reused




# LT2 Product Cost Avoidance




180000000
160000000
140000000
120000000
100000000
80000000
60000000
40000000
20000000
0

CTIA NTC JRTC IR/DRTS HITS MC-ITS ETC-IS OneTESS TRACR STS CIEDAS UOTS LVC-IA n) SMS Ft. Bragg I-TESS II

w/o Product Line Investment Base Cost

**$400 Million in Total Cost Avoidance across the Product Line**

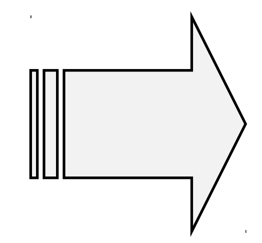



# LT2 FTS Product Line Architectural Framework (PLAF)



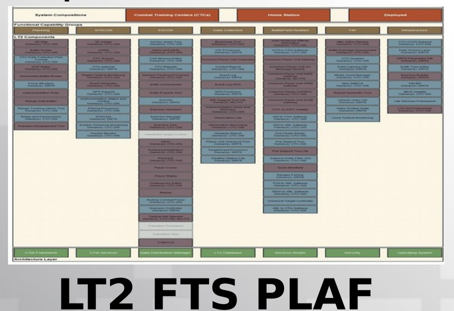

## LT2 FTS PLAF

- Three system compositions
- Seven functional capability groups
- Over 120 software components
- Architectural layer composed of services



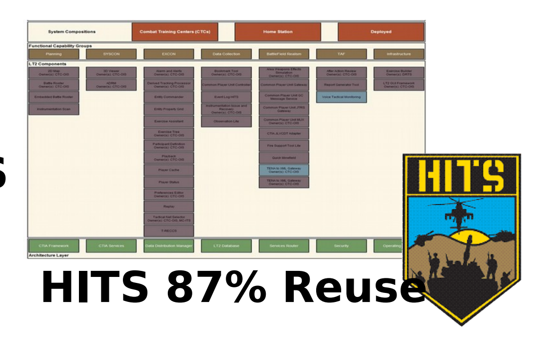
## Example: Homestation Instrumentation Training System (HITS)

- Reused 35 common components
- Created 5 new common components
- Resulted in 87% reuse of common components



**LT2 FTS PLAF**

**<u>Example</u>**
**Cost avoidance of $38M RDT&E for HITS development**




**HITS 87% Reuse**




# LT2 Initiatives




Training Cloud

Virtual
Constructive
Test
Deployed / Embedded
ENTITY
Virtual Role Players
Augmented Reality

Regional Ops Center(s)
SOA
Client Workstations
Homestation
CTCs
Homestation
IDE
Virtualized Servers
SOA
Client Workstations

Secure Comms
T-IS Training Instrumentation System
AMITS
SOA
Servers
SOA
Tablets
Laptops
Client Workstations
Laptops
Smartphones
O/Cs

Force-On-Target
Targets
IPUs
SOA
Force-On-Force
IPUs
OneTESS
Battlefield Effects
IPUs
Urban Operations
Homestation / Live Fire Range Ops. Center

**ExCon & Comms**
ExCon, AAR, RF Comms. ABCS, & Network Data Management
PM CTIS T-IS

**Simulated Fire**
Combined Arms Engagement Pairing BLUFOR & OPFOR
PM LTS A-TESS

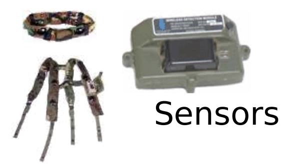
**Live Fire**
Instrumented Urban Operations, & Battlefield Effects
PM DT FASIT

**Training as a Service (TaaS) Vision OV-1**



# Training Entity Architecture Vision



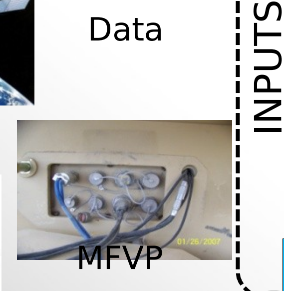
Sensors



ISR



Data



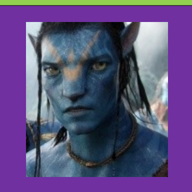
MFVP

Player Input

Control

INPUTS

Portable Training Applications



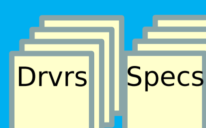
Entity Simulation (Avatar)

- Identity Services
- Casualty State Services
- TSPI Services
- Platform Services
- Training Record Services
- User Interface Services

| Live Training Engagement Composition (LTEC) Services | Virtual Training Engagement Composition (VTEC) Services | Constructive Training Engagement Composition (CTEC) Services | Instructional Training Engagement Composition (ITEC) Services |
| --- | --- | --- | --- |

Training Management Component (TMC)

Platform Abstraction Services



Drvrs Specs ICDs



OUTPUTS

Emitters

Player Feedback

Status



Platform Independent




Live

Appended

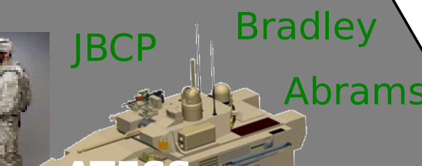
Virtual




Constructive

Test






JBCP

Bradley

Abrams

GCV

Stryker

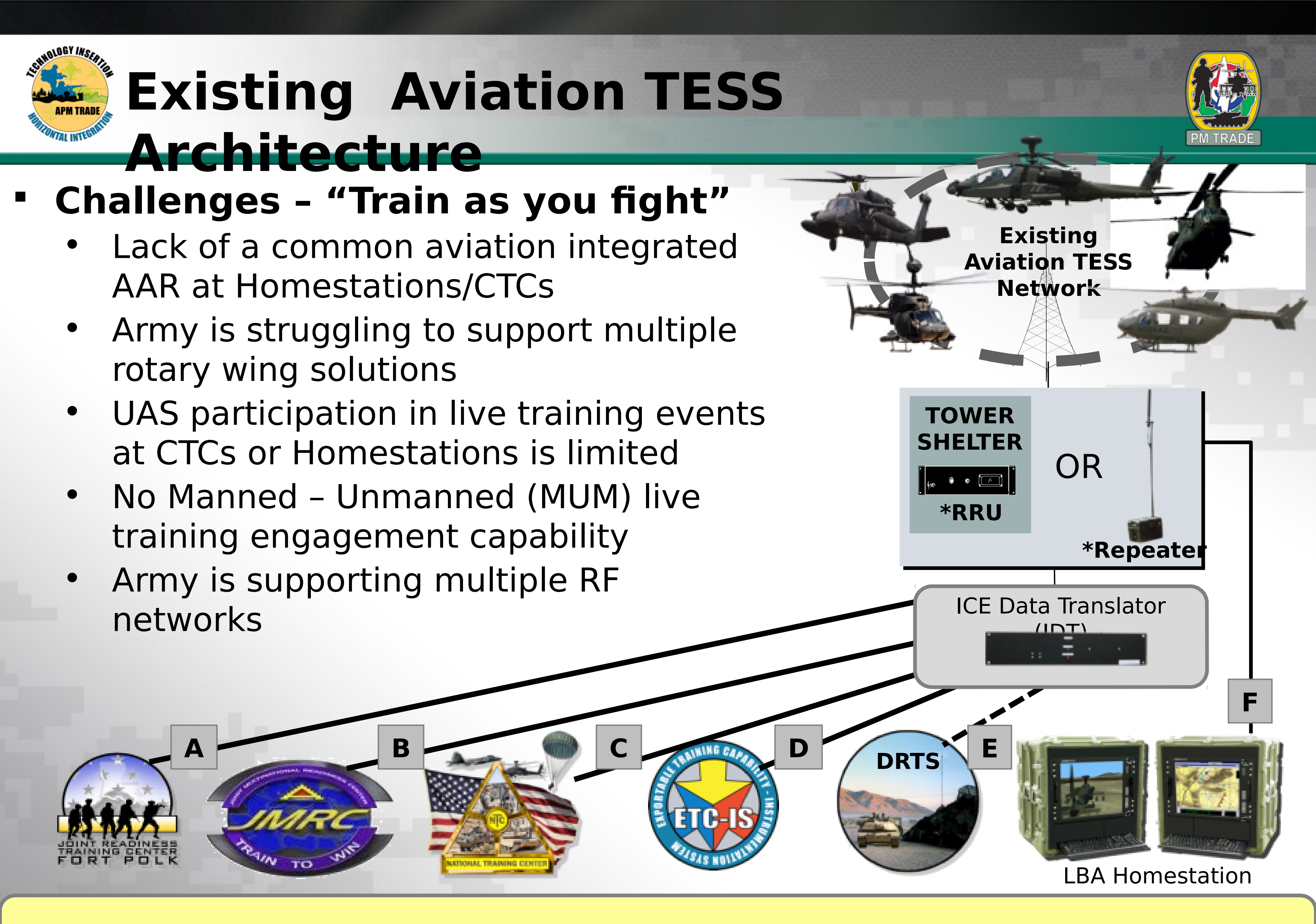
Appended/Embedded




# Live Training Engagement Composition (LTEC) Example Compositions

PM TRADE

| | Appended DMT | Appended Platform | Appended/ Embedded Hybrid | Embedded Platform & Dismount |
|---|---|---|---|---|
| LTEC Services | MILES Sensor; PAN I/F; GPS; Indoor Tracking | MILES Sensor; MGT; GPS; 1553 Bus | MILES Sensor; MGT; GPS; Platform Bus | Dual Use Laser; ABCS I/F; VKI; Victory Bus |
| LTEC Core | LTEC Core | LTEC Core | LTEC Core | LTEC Core |
| Operating System | OSAL | Linux | Windows | VxWorks |
| Hardware Platform | MILES HCU or UPU | MILES HCU or UPU | VDET | Vehicle |




UAS integration is key in order to “Train as you fight”




# Aviation CTC Live Training Vision

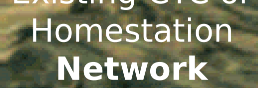




Existing UAS Command & Control Link

*FACE / LTEC*
- Resident in legacy instrumentation radios





Existing CTC or Homestation **Network**



**Universal Common Ground Station (UGCS) or Mobile Control Station**

*Challenge*
- Army is supporting multiple RF networks

*Solution*
- Align with future aviation open architecture and embedded training initiatives

Open/Gov Owned Standard

**Data Translator**




ETC-IS

NATIONAL TRAINING CENTER

LT2 Instrumentation System
CTIA

HITS







JMRC
TRAIN TO WIN

Existing CTC or Homestation **Backhaul**




# LT2 Training as a Service (TaaS) Roadmap




| Completed | | Current | | Future | | | Training as a Service (TaaS) Enabled |
|---|---|---|---|---|---|---|---|
| FY 11 | FY 12 | FY 13 | FY 14 | FY 15 | FY 16 | FY 17+ | |

**Align with COE and Computing Environments**

Establish Governance / Synchronize with TCM-Live & External Customers

Identify Business Goals and Metrics

Collect / Analyze Metrics

Synchronize with Site Hardware Obsolescence Plans

Synchronize with LT2 Product Teams

Synchronize with Mission Command Community

Improve LVC Interoperability

**SOA Analysis** – Baseline

**SOA Experimentation**

**SOA Ready** – Transition Architecture 1

**SOA Capable** – Transition Architecture 2

**SOA Enhanced** – Transition Architecture 3

**SOA Persistent** – Transition Architecture 4

**SOA Mature** – Transition Architecture 5

COE Compliant
Cloud-enabled
Virtualization
SOA-based

Homestations: Ft Benning, Ft Bliss, Ft Bragg, Ft Lewis, Ft Hood
CTCs: NTC, JRTC
Deployed Training
LT2 Products
LT2 Product Line: Presentation Services, Business Services, Infrastructure Services, Data Services, Provisioning, Physical

- Army Training Concept of 2020
- Army Enterprise Network Strategy
- Common Operating Environment
- Net Centric Enterprise Services
- Connecting Solders to Digital Apps

- On-demand capabilities
- Technology agnostic
- Backwards compatibility
- Increase interoperability
- Mobile computing devices
- Lower sustainment costs
- Support net-centricity
- Support COE objectives

**Continuous Activities**

Development, Testing, Trade Studies, IA Accreditation, Documentation, Training, Education, User Feedback







# LT2 Construct Overview

**Jeremy Lanman**

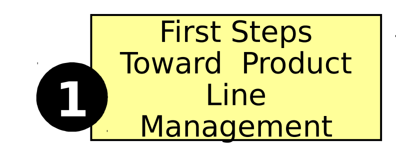


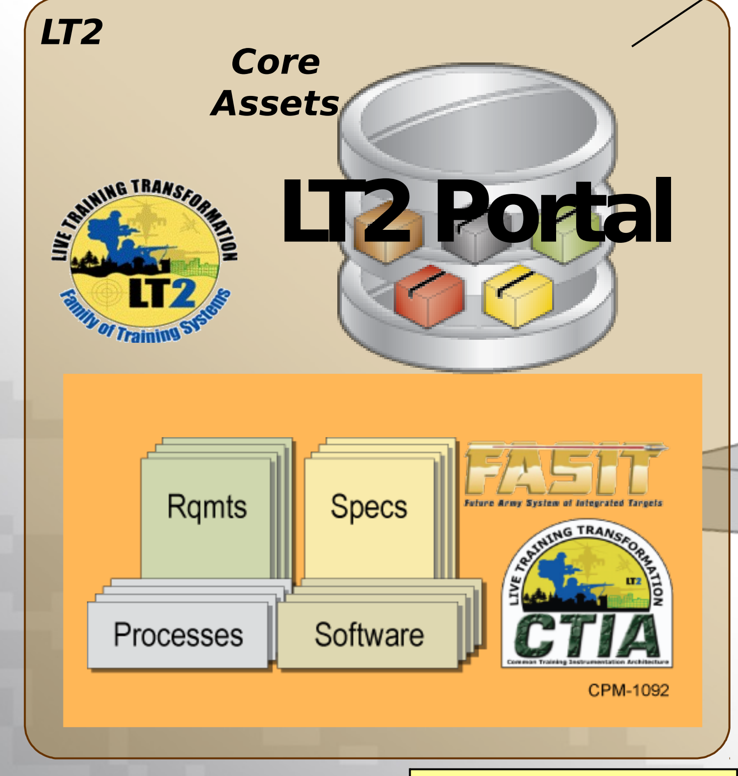

# LT2 Landscape Pre-CPM

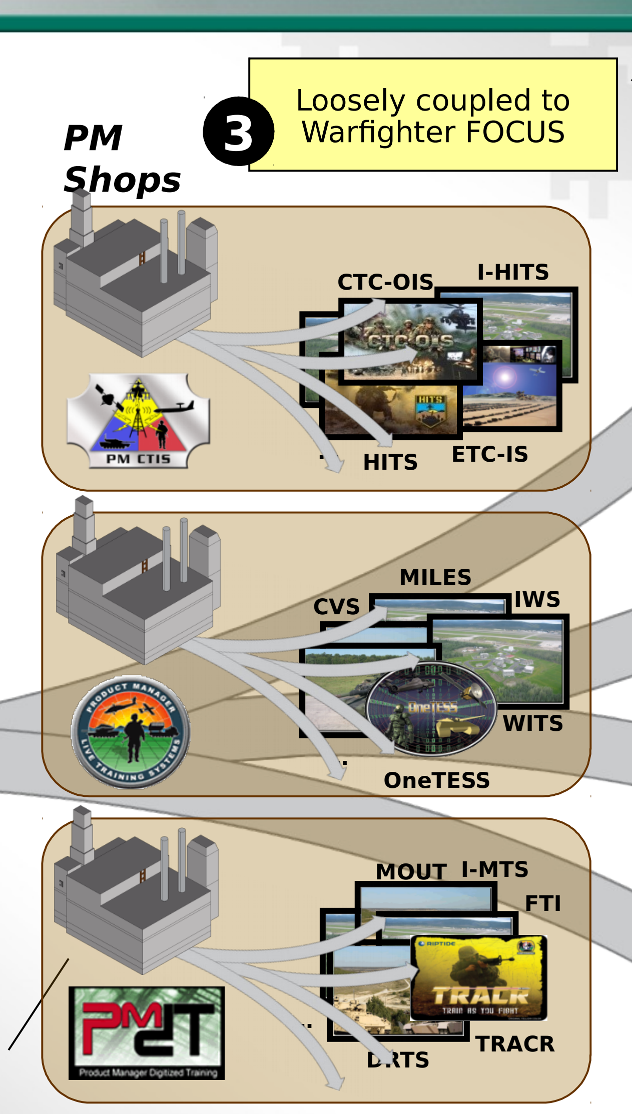





















**Escalating complexity in managing core assets and supporting product teams & users**




# How to Solve It

## Second Generation Product Line Management (2G PLM)






**Automated Variation Management**

1 Feature Profiles Drive Automation

Feature Profiles

LT2 Po

Core Asset Development

Feature / Fix Requests

HITS

CTC IS

Hot Fix

2 Variation is Controlled 100% Reuse

3 Mobile CM Controls Hot Fixes Concurrency Maintained

CTC OIS

Ft. Polk - JRTC

Ft. Irwin - NTC

Hot Fix

DRTS

Ft. Wainwright

Ft. Carson

Ft. Hood

Ft. Polk

HITS

Ft. Bliss

Ft. Lewis

Ft. Benning

Ft. Hood

## Results

- ✓ Configuration Control
- ✓ Variation Management
- ✓ Assets Leveraged by Programs
- ✓ 2X Increase in Productivity
- ✓ Improved Product Quality
- ✓ Total SLOC reduction of 23.5%
  Reduced 14.3M to 10.9M SLOC for LT2 Products
- Unconsolidated SLOC reduction of 31%
  Reduced 6.5M to 4.5M of Uncontrolled SLOC
- Reduced Code Repositories by 17%
  Reduced from 6 to 5 Repositories
- Reduced Defect Repositories by 30%
  Reduced form 10 to 7 Repositories

**2G PLM approach provides efficient management of the LT2 product line**




# LT2 Real World Example




1 OneTESS pulls components to create OneTESS EXCON

11K Files

OneTESS

STOP

One 11K file baseline was now four 11K file baselines

LT2 Portal

11K Files

T-RECCS

2 HITS pulls components to create HITS EXCON

3 ETC IS Reuse Idea: T-RECCS is Born

4 T-RECCS is Tailored for ETC IS

5 T-RECCS is Tailored For OneTESS CPU

11K Files

HITS

11K Files

T-RECCS

11K Files

OneTESS CPU

11K Files

ETC IS

6 Three Day Pilot Project: T-RECCS, HITS & ETC IS

2G PLM
Automated Variation Management

Feature Profiles

T-RECCS

HITS

ETC IS

OneTESS CPU

Automated Production

Successfully Reverted to a single 11K file baseline + Feature Profiles

T-RECCS

HITS

ETC IS

OneTESS CPU

**We learned first-hand that normal reuse concepts are not good enough for CPM**




# Live Training Standards




**Commonality**
- Reduces developmental cost
- Promotes reuse

**Modularity**
- Reduces lifecycle costs
- Improves Reliability, Availability and Maintainability (RAM)

**Nonproprietary**
- Promotes greater vendor diversity
- Maximizes industry involvement in
  - Technology agility
  - Product-line development
  - Providing training capabilities

**Interoperability**
- Live/Virtual/Constructive ITE – increases training opportunities and enhances each domain
- Joint service – train as we fight
- Test and Training – reduce costs

**Extensibility**
- Enables modernization and embedded training

**Accreditation**
- Improves flexibility in addressing syste accreditation
















**INDUSTRY PARTNER S**

**PEO STRI Live Training Standards Initiatives (sample)**
- Product Line Architectural Framework (PLAF)
- Common Training Instrumentation Architecture (CTIA)
- Future Army System of Integrated Targets (FASIT)
- Model-Based Systems Engineering (MBSE) SoS Architecture
- Player Area Network (PAN)
- Connectors/power
- Batteries
- Common message format

Government and industry work together to establish live training standards to promote systematic reuse of software and interoperability solutions




# LT2 Portal (www.lt2portal.org)




**Features**

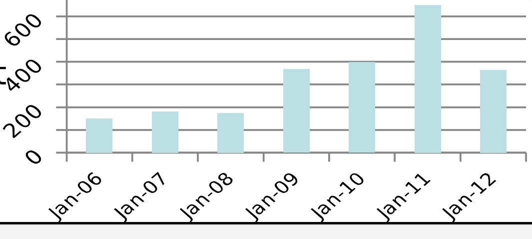
- LT2 community news, events, and briefings
- Information & software repository
- LT2 products, architectures, & components
- Standards, ICDs, & dB schemas
- Document library & collaboration areas
- CAWG product line management
- Dashboards & help desks
- Integration with WFF Portal
- User subscription to changes (proactive)

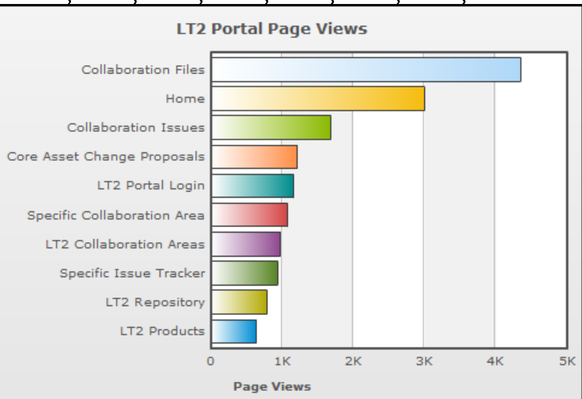



**Benefits**

- The "go to" site for live training
- LT2 product line marketing
- Increased Government & industry communication
- Standards availability
- Acquisition support
- GFI access
- Program metrics
- WFF integration
- Field support visibility
- 24x7 availability

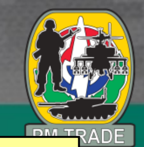
- 1,893 Users
  - 33% Government
  - 67% Industry
- 113 Collab Areas
- 58,734 DL Files
- 9 Events
- 43 News Items
- 26 Briefings





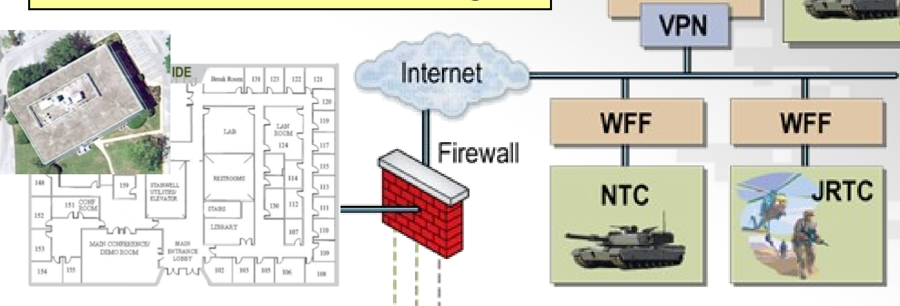
# Integration & Development Environment (IDE)



- **IDE Facility**
  - 2 labs & offices
  - Multiple programs
  - Staff resident
- **Shared resources**
- **Resident cross-functional team members**
- **Local test bed / demo capability**
- **Distributed CM and PTR tracking**
- **Common policies and procedures**
- **LT2 test beds**
- **Industry-wide portal**
  - Expanded for PM TRADE
  - Metrics
  - Collaboration sites
  - File sharing
  - SW product versions
  - Standards availability
  - Event information
  - PD management portal
  - WFF integration
  - 24x7 availability

IDE Building providing labs, offices, and infrastructure to CPM

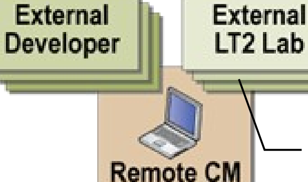
Support on-site hot-fixes with mobile CM capability. Optimizes sustainment and saves changes




Possible Future DREN Connection

Connections to External Development Environments and Labs as Required

Distributed development
- Prevents divergence
- Promotes CPM tools, processes, resource sharing
- Decreased hardware costs
- Easier backup strategy
- Increased testing capability
- Increased ROI within labs
- Decreased configuration time




DIL

CPM-1040d

Distributed Labs, sharing assets lowers costs

Portal facilitates file sharing and collaboration







# Common Training Instrumentation Architecture (CTIA) Overview

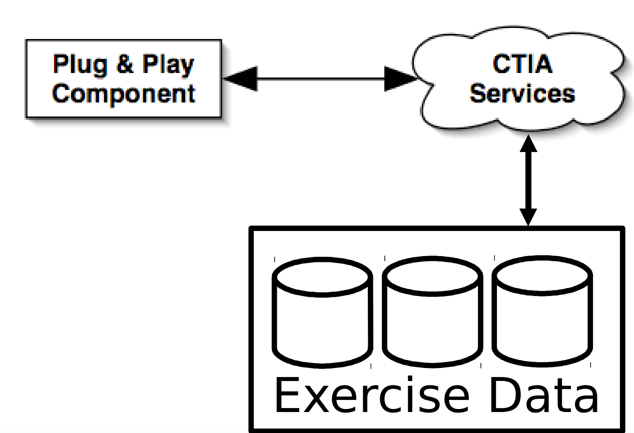
Jeremy Lanman




# CTIA Architecture Concepts




- **Distributed, component-based, client-server architecture**
  - Centralized, persistent exercise planning, history database
- **Domain-specific architecture**
  - Requirements, interfaces and data defined from start to meet the specific needs of the Army live training community
- **Architecture specified by a set of middleware APIs**
  - CTIA frameworks encapsulate network communications/protocols
- **Rely on industry standards for data distribution**
  - CORBA IIOP
  - SOAP/HTTP
  - UDP multicast / unicast
  - WEBDAV/HTTP
  - JDBC/ODBC/ADO.NET






# Component-Based Architecture




**A CTIA component is**

- A defined portion of the architecture that can be "plugged in and out"
- A "building block" that is used to compose a live training system

**A CTIA component has**

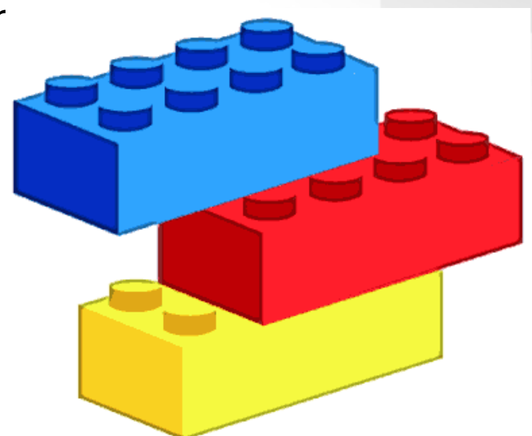
- A set of requirements it must meet
- A well-defined and managed interface specificatior
- Well-defined behavior

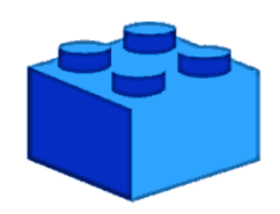
**CTIA components support**

- Variability
- Reuse
- Technology insertion
- Concurrent development

**Three categories of components**

- System components
- CTIA services
- Plug and play components
  - Processors
  - Instrumentation





# Next Generation Product Line









## Challenges

- Mobile application support
- Distributed training center support
- Keeping pace with current technologies
- Compatibility with other military systems
- Scalability of footprint across entire product line
- Time to release
- Integration impacts on products adopting new releases

## Benefits

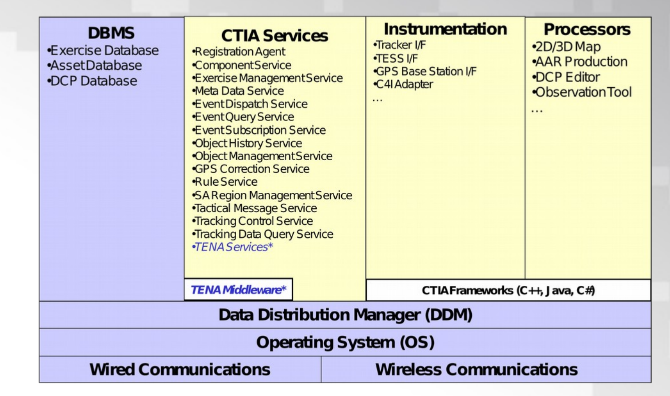
- Native support for mobile/web applications
- Supports distributed training centers using cloud computing
- Separates technologies from interfaces for future evolution
- Supports web services and SOA technology aligned with COE directives
- Composable services to scale to needs to individual use cases
- Independently release services and automation of testing to



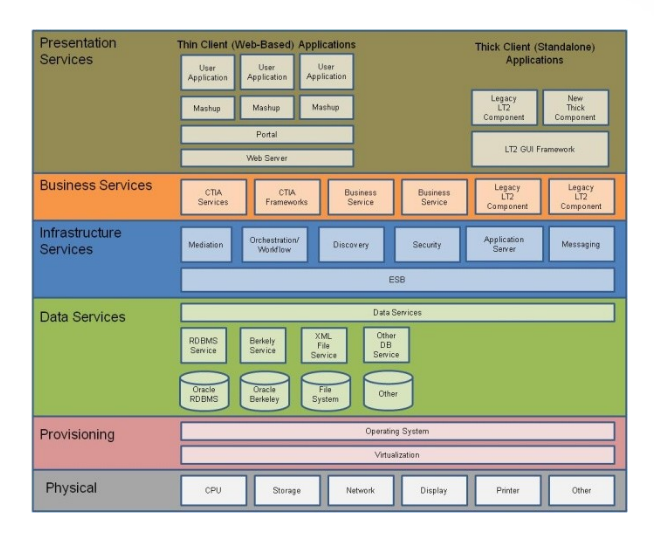

# CTIA 3.x vs. CTIA 4.0 Architecture




- **In CTIA 3.x and prior**
  - Architecture defined using middleware
  - Consists of CORBA + CTIA frameworks
  - This creates a tight coupling between applications (components) and the middleware (a middleware API change requires code changes by components)
  - Places technology limitations on application developers (programming language, 3rd party libraries, memory/CPU, etc…)
- **In CTIA 4.x**
  - Service interfaces are defined independent of the implementing technology (no programming language or 3rd party library constraints)
  - Services are composable, allowing greater reuse and eliminating redundant code
  - Service consumers and service providers are loosely coupled (change to one does not necessitate a change to the other)
  - Support COE and cloud computing vision for Army




Legacy Framework




Future Framework



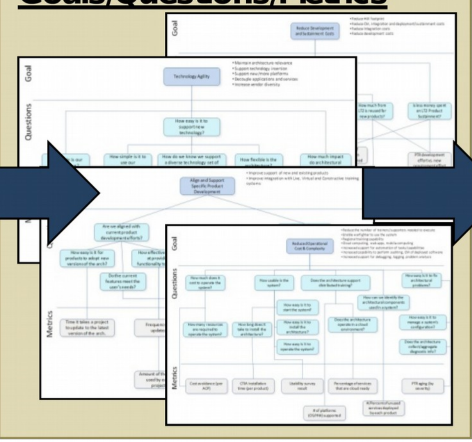

# CTIA SOA Roadmap




## PMTRADE Strategic Goals

- Reduce Operational Cost & Complexity
- Align & Support Product Development
- Enhance Soldier Training
- Reduce Sustainment & Development Costs
- Increase Technology Agility
- Leverage Other Army Systems
- Align to Army COE, Mobile Computing and Cloud Strategies

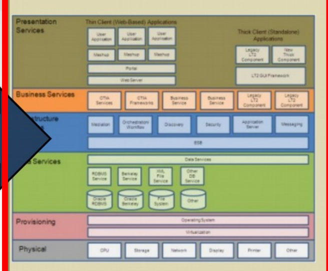
## Goals/Questions/Metrics



## SOA Design Principles

- Standardized Service Contracts
- Service Loose Coupling
- Service Abstraction
- Service Reusability
- Service Autonomy
- Service Statelessness
- Service Discoverability
- Service Composability

## Objective Architecture



## Transition Architectures Defined to Align with Capabilities Required by LT2 Products

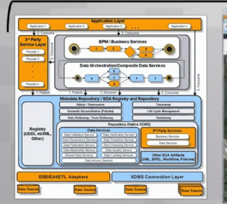
Transition Architecture 1
Land Navigation Prototype

Transition Architecture 2
Full Land Navigation Use Case

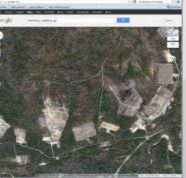
Transition Architecture 3
Full TRACR Use Case

Transition Architecture 4
Full HITS Use Case

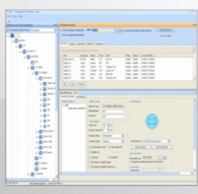
Transition Architecture 5
Supports Regional Training Center Use Case



SOA Infrastructure



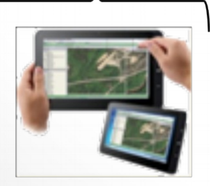
Web-Based 2D Map



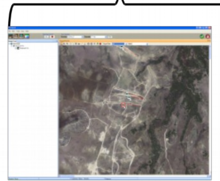
Participant Definition Tool



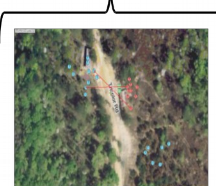
Mobile Device Support



Complete 2D Map, Alerts, Observations



Instrumentation / Targets, Tactical Voice, Indirect Fire



Exercise Planning & AAR



Supports full CTC-IS, Distributed Training, Deployable SOI




# Objective Architecture and Framework




Mobile Client
Web Client
Legacy Client

CTIA 3.0
Legacy Clients
CTIA Services
Temporary

3.0 Gateway

User Defined
Widgets and Web Applications
CTIA Services
CTIA Frameworks
Legacy LT2 Framework
Business Services
Infrastructure Services
Enterprise Services
Service Cloud
Maps
Exercise
Report
Data Cloud

Regional Training Center (RTC) for Live Training Community

Federated
Federated
Federated and Synchronized

User Defined
Local Web Applications
Business Services
Locally Hosted Infrastructure Services
Locally Hosted Enterprise Services
Local Data
Locally Hosted Data

Range (if needed)

Presentation Services
Thin Client (Web-Based) Applications
Thick Client (Standalone) Applications
Business Services
Infrastructure Services
Data Services
Provisioning
Physical







# CPM Next Base SOW

Jim Grosse




# Base SOW Tasks




## Product Line Management

| | |
|---|---|
| Technical Planning | Interface Management |
| Requirements Management | Configuration Management |
| Risk Management | Technical Assessment |
| Technical Data Management | Customer Interface Management |
| Decision Analysis | Organizational Planning |
| Technology Forecasting | Metrics, Measurement and Tracking |
| Resource Planning and Management | Facilities Management |
| Integrated Product Team Management | Technical Reviews |
| Business Strategy | Concept of Operations |
| Reuse Analysis | Data Repository |




# Base SOW Tasks




## Core Asset Development

| | |
|---|---|
| Architecture Development | Architecture Evaluation |
| Architecture Validation | Domain Analysis |
| Decision Analysis | Variation Management |
| Re-Use Analysis | Service / Component Development |
| Requirement Engineering | Test & Verification |
| P/L Developer Training | Version Control |
| Technology Insertion | Obsolescence Management and Planning |
| Configuration Management | Standards Development and Sustainment |
| Performance V&V | Quality Assurance |
| System of System Model Management & Enhancement | Training and Infrastructure as a Service Development |




# Base SOW Tasks




## Product Development and Sustainment

| | |
|---|---|
| Concept Development | Functional Analysis |
| Requirements Analysis | System Engineering |
| Software Engineering | System Design |
| Prototyping | Software Integration |
| System Integration | Testing & Test Engineering |
| Fielding | Training |
| Verification Testing | Validation Testing |
| Post-Deployment Software Support (PDSS) | Post-Production Software Support (PPSS) |
| System Demonstration | DIACAP Testing and Cert |
| Configuration Management | Security Engineering |




# Base SOW Tasks




## Product Line Support

| | |
|---|---|
| Trade Studies | Training |
| Subject Matter Expertise | Help Desk |
| Integrated Development Environment | Software Engineering Environment |
| Tool Support | Publishing |
| Technical Library | P/L Development and Support Environment |
| Product PDSS/PPSS Development and Support | Prototyping |
| Integration | Testing |
| Portal Management | SoS Management |
| Quality Assurance | |




# Base SOW




| | |
|---|---|
| Facility | • Your management team, production facility and primary developers shall be located within 10 miles of PEO STRI. |
| Systems Engineering | • These tasks shall encompass the efforts associated with the development, dissemination, engineering, management, and maintenance of the P/L architecture, components, and documentation. These tasks shall also include the works efforts associated with the engineering, management, and tracking of LT2 P/L fielded products and P/L services and core assets. |
| Software Engineering | • The contractor shall develop the system software and firmware and shall follow the contractor's organizational software development practices. |
| Hardware Engineering | • As specified by individual order, the contractor shall integrate and assemble the system hardware that satisfies the performance and IA requirements stated in the delivery order. |




# Base SOW




| | |
|---|---|
| Test Engineering | • As specified by individual order, the contractor shall develop, implement, and maintain a system testability process satisfying all testability requirements, which is traceable throughout the design process, is integrated with other system engineering requirements, and is disseminated to design personnel and subcontractors. |
| Other Engineering Support | • Safety, Supportability, Manufacturing, QA, Reliability, Maintainability, Producibility, MANPRINT |
| Transition | • The contractor shall synchronize with the life cycle contractor support (LCCS) contractor (WFF) for the bi-directional communication regarding the P/L components, subsystems, and systems. |




# Base SOW Tasks




## Logistics

| | |
|---|---|
| Requirements Analysis | IUID Marking and Reporting |
| Post Production Support | Training Support Package |
| Test and Evaluation | Training  and Support |
| Maintenance Actions | Training Facility and Equipment |
| Fielding plans | Reliability Analyses |
| Validation | Tools and Test Equipment |
| Verification | Facility Analyses and Summary |
| Support Analyses | Diagnostic Procedures |
| Repair Level Analyses | Repair Procedures |
| Commercial Off The Shelf Publications | Support Concepts |
| Technical Publications | Spares and Support and Test Equipment |
| Initial Spares and Repair Parts Lists | Logistics Database Management |
| Provisioning Parts List | Common and Bulk Items |
| Serial Numbers | Materiel Component List |
| Accounting Requirements Codes | Warranty Data |
| Baseline Drawing Revisions | Source, Maintenance, and Recovery Codes |
| Maintenance Planning | Supply Support |
| Site Support | Manpower, Personnel and Training |
| Transition Planning | Interim Contractor Support |







# Information Assurance

Graham Fleener




# Information Assurance Process




- **CPM Next will maintain a number of PM TRADE accreditations**
  - DRTS, IMTS CACTF, HITS, CTC-IS, ETC-IS, UAC, ASH CTC MOUT-IS
- **Maintain an existing IA process to include**
  - Creating efficiencies within existing processes for accreditations
  - Standardizing to the fullest extent possible IA process across DOs
  - Ensuring system upgrades are IAW IA regulations
  - Maintaining applicable DIACAP package: DIP, ISP, HW/SW, COOP
  - Maintaining an IA Vulnerability Management Plan that spans all DOs and accreditations
  - Using IDE lab to support IA certification test events and for testing emerging IA requirements for Cloud, SOA, HBSS, and




# Information Assurance Solutions




- **The contractor will provide recommendations for IA solutions, both technical and procedural, that will create efficiencies in IA processes**
  - Cellular reach back solution
    - IAVA management and help desk
  - Offline Windows Software Update Server (WSUS)
    - Process and procedures to limit contractor travel to sites for IAVA installation and STIG compliance
    - CPM Next supports numerous standalone systems







# Common Training Instrumentation Architecture (CTIA) DO SOW

**Jeremy Lanman**


TECHNOLOGY INSERTION
APM TRADE
HORIZONTAL INTEGRATION

# CTIA DO SOW


PM TRADE




# CTIA DO Contract




- Estimated at $3-5M / year
- Cost Plus Fixed Fee
- No EVMS anticipated for this DO







# LT2 Construct DO SOW

Jeremy Lanman




# LT2 CPM Construct DO SOW






# Test Engineering




- One major challenge to enterprise adoption of cloud and mobile-based technologies has been the lack of visibility into testing, quality and security concerns in distributing composite services and applications
- An innovative framework is needed to allow software product line developers to exhaustively test services-based cloud and mobile applications in support of COE initiatives
- This work will advance support for LT2 P/L services development processes, automated software engineering techniques for the cloud, and cloud application quality of service
- Consider factors such as integration of externally available services, security, performance, availability

**Bottom-line: Dependable, reusable, and automated tests are the foundation for high quality service deployments in a dynamically distributed SOA, cloud & mobile-based environment**




# Model-Based Systems Engineering (MBSE)




Training SoS Modeling Framework

JCIDS

| Strategic Planned | | Acquisition | | Implementation | | Deployed Systems | |
|---|---|---|---|---|---|---|---|
| Products | Core Assets | Internal | Published | Products / Core Asset | Model Spec. | Specific | Generic |

**Planned** → **Prepared** → **Executed** → **Assessed**

UPDM / SysML — UPDM (DoDAF) — UPDM / SysML / UML — UPDM / SysML / UML

**Modeling Frameworks**

Referencing relation between models

**Standard doctrinal process (ADP-1)**




# LT2 Construct DO Contract




- Estimated at $2-4M / year
- Cost Plus Fixed Fee
- No EVMS anticipated for this DO







# CTC-IS PDSS DO SOW

**Mark Dasher**




# CTC-IS PDSS Overview




- **Combat Training Center Instrumentation System Post Deployment System Support (CTC-IS PDSS)**
  - Support NTC and JRTC
    - Help desk
    - Onsite technical support for LT2 products
  - Provide life cycle management of the CTC-IS of the components in scope of the PDSS program
  - Corrects software problems
  - Change the baseline to
    - Support training gaps
    - Reduce life cycle costs




# CTC-IS PDSS Anticipated Tasks




- **The PDSS team anticipates the following tasks:**
  - Provide onsite support (two bodies) for the NTC and JRTC
  - Provides 2 software deliveries to each site per year
  - Provide Life Cycle management
    - Update documents and artifacts
    - Information Assurance assistance for IAVA and certification
    - Procure software agreements / licenses
    - Maintain the PDD
  - Provide emergency response support to the NTC and JRTC

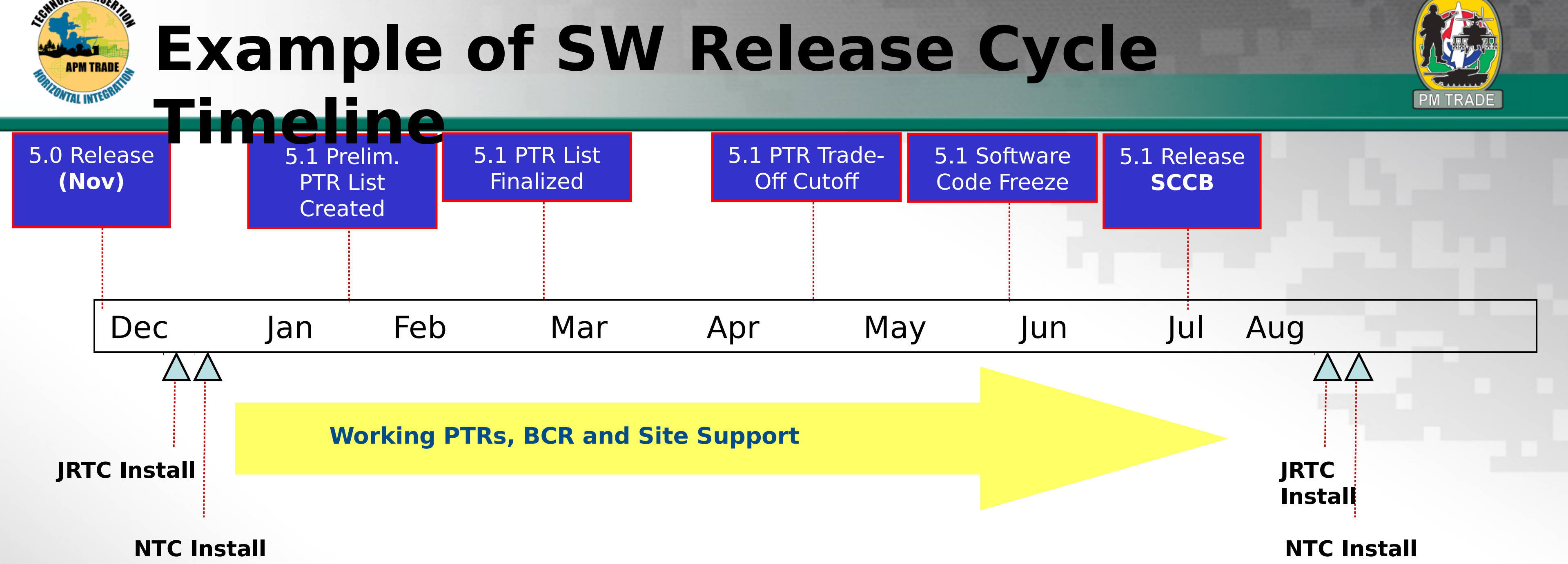



# CTC-IS PDSS Additional Tasks




- **The following tasks may be implemented during the contract**
  - Modify and upgrade the baseline to
    - Close training gaps
    - Reduce life cycle costs
  - Provide logistics data for the system
  - Inventory the system

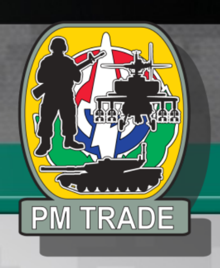
# Example of SW Release Cycle Timeline




- Preliminary PTR list created (early-mid January)
  - Site PTR lists analyzed and agreed upon for build using IPTs
  - Final PTR list to be finalized by early February; remaining time until cutoff date PTRs can be swapped in/out
- PTR trade-off cutoff (1 month prior to software code freeze)
  - PTR list for the build is finalized; only training/missing critical PTRs can be reprioritized to be included
  - Note: At anytime before this date site PTRs can be reprioritized and swapped into the build with equivalent PTR(s) being swapped out to ensure build PTR hours remain the same
- Software code freeze (early May)
  - PTR trade-off is no longer possible since due to PTR development hours being limited prior to SWIT/SIT
- CTC 5.1 software release (mid June)
  - All PTRs have been implemented; IDE SIT/PTR Verification is complete; formal SCCB held and release is approved




# CTC-IS PDSS DO Contract




- Estimated at $3.3-4.3M / year
- Cost Plus Fixed Fee
- No EVMS anticipated for this DO




# Closing




- Thanks
- Questions